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09/491,146	01/25/2000	Yury E. Khudyakov	03063-0381	8145

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EXAMINER
LUCAS, ZACHARIAH

ART UNIT	PAPER NUMBER
1648	13

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/491,146	Applicant(s) KHUDYAKOV ET AL.	
	Examiner Zachariah Lucas	Art Unit 1648	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 August 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *13 and 16-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13,16 and 18* is/are rejected.

7)☒ Claim(s) *17 and 19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Status of the Claims

1. Claims 13 and 16-19 are pending in the application. Claims 13, 16, and 18 were rejected, and claims 17 and 19 were objected to in the prior action, mailed April 4, 2002. Claim 13 was amended in the Amendment filed August 12, 2002 (Amend. C) for reasons unrelated to the outstanding rejections.

2. Because this office action raises new rejections not necessitated by amendment, it is being made non-final.

Information Disclosure Statement

3. The information disclosure statement (i.e. the documents filed along with Amend. C) filed August 12, 2002 fails to comply with 37 CFR 1.98(a)(1), which requires a list of all patents, publications, or other information submitted for consideration by the Office. For convenience, the references have been cited in the PTO Form 892 accompanying this action.

Specification

4. **(Prior Objection-Withdrawn)** The prior action objected to the specification on the grounds that it frequently referred to the MATRIX immunoassay without accompanying generic terminology. Because Amend. C amended the specification such the trade name MATRIX is now accompanied by the generic descriptor "immunoassay" and because the assay is well known in the art, this objection is withdrawn.

Claim Objections

5. **(Prior Objection- Maintained)** Claims 17 and 19 were objected to in the prior action for depending from rejected claims. These claims depend from claims from claim 13, 16, and 18. Because the outstanding rejection as to claims 13, 16, and 18 is maintained for the reasons of record, and for the reasons as set forth below, the objection to claims 17 and 19 is likewise maintained.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. **(New Rejection)** Claims 13, 16, and 18 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claims describe a nucleic acid encoding a multiple epitope fusion protein (a mosaic protein) "comprising more than two antigenic peptides from the same domain from different genotypes of hepatitis C virus." The specification describes a mosaic protein comprising "a plurality of homologous antigenic peptides from different genotypes of a hepatitis virus." See e.g., page 12, lines 18-20. The specification nowhere indicates that applicant considers the invention to include proteins wherein

the epitopes from the same domain are not homologous to one another. However, none of the identified claims restrict the antigenic peptides to homologous peptides, although it does require that the peptides be from the same domain. As the claims read more broadly than the description of the application, the claims are rejected for encompassing inventions not indicated as being part of the invention in the specification.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. **(New Rejection)** Claim 13, and dependant claims 16, and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims describe a nucleic acid encoding a multiple epitope fusion protein (a mosaic protein) "comprising more than two antigenic peptides from the same domain from different genotypes of hepatitis C virus." The specification describes a mosaic protein comprising "a plurality of homologous antigenic peptides from different genotypes of a hepatitis virus." However, none of the identified claims restrict the antigenic peptides to homologous peptides, although it does require that the peptides be from the same domain. The claims could read on a protein comprising non-homologous epitopes from the same domain of different HCV genotypes. It is unclear from the claims what the scope of the claimed invention is. Further, the claims are also indefinite as it is not clear whether each of the peptides must be from a different HCV genotype or if more than one peptide may be from the same genotype so long as there are peptides from at least one other HCV genotype.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

11. Claims 13 and 16 are rejected under 35 U.S.C. 102(a) as being anticipated by Yagi et al., Biol. Pharm. Bull., 19:1254-1260. These claims read on a nucleic acid encoding a protein comprising more than two antigenic peptides from the same domains from different genotypes of HCV. Claims 16 and 18 further specify that the peptides are, respectively, from NS4 proteins, or from nonstructural proteins. Yagi teaches a chimeric HCV antigenic protein, made from a recombinantly made cDNA. This protein is defined as follows: it comprises 9 selected epitope regions, including two from NS3, and two from two different genotypes of NS4. Thus, the protein has more than two antigenic peptides, and for NS4 it has epitopes from two different genotypes. As it is unclear whether the claims require all of the epitopes to be 1) from the same domain, 2) homologous, and 3) from different genotypes, the claim is being read such that it may include epitopes from different domains, the epitopes need not be homologous or all from different genotypes. In view of this claim interpretation, the proteins and nucleic acids taught by Yagi anticipate the stated claims.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. **(Prior Rejection- Maintained)** The rejection of Claims 13, 16, and 18 under 35 U.S.C. 103(a) as being unpatentable over Khudyakov et al. (J. Virology 68:7067-7074) in view of Zhang et al. (J. Med. Vir., 45:50-55), Bukh et al. (Proc. Natl. Acad. Sci. USA, 91:8239-8243), and Chien et al. (Proc. Natl. Acad. Sci. USA, 89:10011-10015) was maintained in the prior action. Claim 13 describes a nucleic acid encoding a protein comprising more than two antigenic peptides from the same domain from different Hepatitis C genotypes.

It is noted that in Amend. C, claim 13 was amended so that instead of reading on a nucleic acid encoding a mosaic protein comprising a plurality of antigenic peptides, it now reads on the nucleic acid identified above. This Amendment does not affect the applicability of the 103 rejection, and is not indicated as doing so by the applicant. The new limitation of "comprising more than two antigenic peptides" is equally taught by the Khudyakov reference. See, page 7072, right column (reading "at least three antigens should be used in the design of a sensitive anti-HEV assay," the purpose of the protein taught by the reference); and page 7073, left column (in discussing the mosaic protein taught in the reference, the paper states "such a design allows for the introduction of additional antigenic regions"). Thus, the reference indicates that at least three, and potentially more, antigenic peptides may be introduced in the mosaic protein.

Along with the amendment to claim 13, the applicant also traversed the 103 rejection regarding this claim and claims 16 and 18 in Amend. C. Applicant raised four primary arguments against the obviousness rejection of record. These arguments are identified roughly as follows"

a) the arguments showing obviousness provided by the examiner are insufficient to establish a prima facie case of obviousness (Amend. C, pages 22-26);

b) there is nothing in the art references of record to suggest the combination of their teachings (pages 16-18);

c) analysis of the prior art in chronological order teaches against the combination of the references (pages 18-20); and

d) difficulties taught by the art teach away a reasonable expectation of success in the combination of the references (pages 20-22).

(Note- the arguments are not listed in the order of their presentation by the applicant.) The examiner does not find the applicant's arguments persuasive for reasons that will be discussed more thoroughly below. Because the argument are not found persuasive, and because the examiner is not otherwise convinced that the rejection should be withdrawn after re-examining the art, the rejection is maintained.

a) The prima facie case for obviousness under 35 U.S.C. 103 (a) has been made.

As stated above, applicant has raised four arguments against the obviousness rejection maintained in the prior action. The first argument listed (the last presented by the applicant), is that the examiner has not made a prima facie case for obviousness. The applicant argues that the examiner argued five points to support the rejection on the basis that the Khudyakov reference provides those skilled in the art motivation to combine that reference with the other cited

references, and that these five points do not establish obviousness. The first point, according to the applicants, is that Khudyakov teaches that strain specific variation in antigenic properties is well known for other viruses. Applicants then argue that while such variance is known in the art, the reference does not teach the claimed protein. The examiner does not see any inconsistency between the two statements. In this 103 rejection, the examiner has nowhere asserted that any one reference teaches the claimed invention.

The second "prong" identified by the applicant is that Khudyakov teaches that the mosaic protein is an advantageous diagnostic reagent. The applicant does not challenge this observation. Instead the applicant argues that while such may be true where a mosaic protein may be made to work, there a difficulties in the construction of such proteins that may affect whether one skilled in the art would have had a reasonable expectation of success in making other such mosaic proteins. These difficulties will be discussed in more detail in reference to argument **d)**. However, the existence of such difficulties does not rebut the teaching of Khudyakov. The applicant further argues that due to these difficulties, the only motivation one skilled in the art would have had is that the applicant's have now done so, and therefore the rejection is based on impermissible hindsight. The examiner is not persuaded that any impermissible hindsight has been made. While the applicant has argued that one in the art making other mosaic proteins than the one disclosed in Khudyakov may face difficulties, this in no way obviates the motivation provided by Khudyakov to do so. As the applicant rightfully points out, such difficulties affect the expectation of success in making other such proteins. However, the motivation may still be present even where the expectation of success is lacking. This is why the requirements of motivation to combine references, and expectation of success in the combination, are two

separate elements of the obviousness rejection. See e.g. MPEP § 706.02(j) (Noting that *three* basic criteria must be met to show obviousness, one being motivation, and another separate requirement being a reasonable expectation of success).

For the third prong in support of obviousness argued by the applicant, the examiner made a connection between the reference in Khudyakov to Chien, in which an alternative approach to the construction of proteins containing multiple antigens without the loss of antigenicity. Applicant argues that this is not a motivation to combine the references, and thereby make render an HCV mosaic obvious, but a motivation to keep the teachings distinct. This applicant phrases their argument this way:

> Khudyakov explicitly distinguishes the *strategies* employed by the two studies, leaving the characterization of these two very distinct viruses as hepatitis the only fact upon which to tie these references together. (emphasis added)

The examiner would like to point out that it is in fact only the strategies that Khudyakov is trying to distinguish, and not the antigenic sources used to illustrate them. However, the fact that Khudyakov saw it appropriate to compare these strategies is telling, especially when seen in view of Khudyakov's constant referral to the utility of mosaic proteins in general, without limiting it to mosaic proteins of HEV. See e.g. abstract, last sentence. To the examiner, this suggests that the same strategies may be applied to the same situations. More particularly, it suggests that the strategies of both Chien and Khudyakov may be applied equally to HEV and HCV, and any other virus or antigenic source that may raise the problem of antigenic drift. Khudyakov is teaching a strategy, not a specific protein. However, the presentation and comparison's used by the author clearly suggest that the strategy is applicable to Hepatitis subtypes E, C, and B. That the author distinguished the strategies is not evidence that the author

also intended to indicate that the antigens either strategy was illustrated with could not be used equally in the other strategy.

The applicant also argues that the following statement by the examiner on page 3 of the prior action was misguided: "Khudyakov et al. further suggest the applicability of the mosaic protein approach for hepatitis viruses other than HEV by teaching successful construction of a mosaic protein for diagnosis of hepatitis B virus." To an extent, the examiner agrees. Khudyakov was not suggesting the applicability of the mosaic virus to other hepatitis viruses, but was suggesting that the fact that the mosaic protein strategy taught in the reference could be applied to any antigen. Page 7073, left column. Nonetheless, when combined, the facts that the mosaic protein approach had already been used with two separate hepatitis virus, the comparison to a second strategy in which HCV had been used, and the indication that the strategy taught by either Chien or Khudyakov had broad applicability, all clearly suggest that the mosaic protein approach could be used for HCV.

Finally, with reference to the fifth of the applicants' five prongs, the applicant argues that the fact that Khudyakov teaches that there may be technical challenges in the creation of an operative mosaic protein destroys the element of reasonable expectation of success. However, although Khudyakov does teach technical challenges to the creation of a mosaic protein, it also indicates methods of avoiding these problems, and the source of the problems. Page 7073, right column (in discussing the technical challenges, Khudyakov states: This finding suggests that proper modeling of antigenic epitopes within the mosaic proteins may require attention to the secondary and tertiary structure and may require the construction of several variants of artificial antigens.) The challenges would therefore have been clear to those skilled in the art, and

avoiding or finding solutions to such commonplace problems in protein manufacture is expected in the art. The affect of the technical difficulties on reasonable expectation of success will be further discussed in reference to applicant's argument **d)**. Thus, given the fact that the reference teaches the broad applicability of the strategy, and that the reference both identifies the challenges that may be faced, and potential solutions, those skilled in the art would have had a reasonable expectation of success in the making the protein.

In view of the above discussion, the examiner is not persuaded by the applicant's argument that a prima facie case for obviousness has not been met. Therefore, applicant's arguments in **a)** provide no adequate reason that the obviousness rejection should not be maintained.

b) The references both suggest and provide motivation for combination to form the claimed invention.

As a separate argument from the one presented above, the applicant challenges the suggestion and motivation provided by the references to combine them to achieve the claimed invention. In this argument, the applicant provided three sub-arguments. The first is that Khudyakov does not suggest the application of the mosaic protein strategy to HCV. The examiner feels that this argument was adequately addressed in the discussion above regarding the combination of Chien and Khudyakov (the applicant's "third prong" of the argument establishing obviousness). The applicant then set forth two arguments that may be perceived as attempts to rebut obviousness. The first of these two arguments relates to the application of the strategy taught by Khudyakov to HCV. This is the argument identified as **b)** above. The second

argument is the argument related to the chronology of the references identified as **c)** above. It will be dealt with separately.

The argument against the applicability of Khudyakov to HCV is roughly as follows. The applicant first argues that Khudyakov teaches the application of the mosaic protein strategy with reference to HCV. The applicant then argues that HEV and HCV are unrelated viruses, and that the teachings with relation to one of these viruses does not necessarily relate to the other. The applicant then introduces a reference by Kumar et al., which was referred to in Khudyakov as teaching an HBV mosaic protein. It appears that Kumar was referred to only to introduce the HBV mosaic protein. The applicant argues that Chien suggests that different diagnostic strategies may be required for the HBV and HCV viruses. The applicant concludes that because the mosaic virus is not explicitly suggested for application to HCV, and because HEV is very different from HCV, and because Chien suggests a different diagnosis strategy may be required for the HBV and HCV viruses, there is no motivation to combine the Khudyakov and Chien references to make an HCV mosaic protein. On its face, the applicant's argument appears persuasive. However, the rejection is maintained for the reasons below.

First of all, the examiner is not persuaded by the evidence that the applicant has provided to show the differences between HCV and HEV. Just as HEV and HCV are different viruses, so are HEV and HBV. Yet, the mosaic protein has been taught as being an effective tool for both of these viruses. Therefore, it is apparent from the references that the diagnostic strategy taught by Khudyakov may be applied to unrelated viral antigens. Therefore the difference between HEV and HCV structures and infectivity processes do not seem relevant to the use or creation of a multiple antigenic epitope mosaic protein.

The Chien reference does indicate that there are differences in the antigen targeting of the immune response during HCV infection. It suggests on that basis that the inclusion of the multiple epitopes in the diagnostic protein would lead to improved diagnostic efficiency with regards to HCV. However, while Chien does indicate that there may be such improved results with the inclusion of multiple different epitopes, the reference does not teach that a protein such as the ones taught by Kumar and Khudyakov are not effective diagnostics. Thus, even if the strategy taught by Khudyakov were less effective that the protein suggested by Chien, one of ordinary skill in the art would still have been motivated to use them as diagnostics. However, it may not be the case that one strategy is necessarily more effective than the other. Each of the two strategies of Chien and Khudyakov are attempting to increase the efficacy of diagnostic proteins. Chein is doing so by increasing the number of different epitopes present in the diagnostic protein. Chien, abstract, page 10011. Khudyakov is instead increasing the range of genotypes to which the diagnostic protein is sensitive. Khudyakov, page 7072. Nowhere does Chien actually compare their proteins to proteins such as the ones described by Khudyakov. Thus, upon reading Khudyakov and Chien, one of ordinary skill in the art may have reason to make both proteins, but they would in any case still be motivated to make the protein taught by Khudyakov.

c) Even when considered in chronological order, the prior art does not teach away from the claimed invention.

In this traversal, the applicant argues that one of the references, Zhang et al., teaches away from the combination of the references to make the claimed mosaic protein. The applicant argues that because Zhang teaches a new method of assaying for HCV genotype presented in Zhang, one of ordinary skill in the art would have had no motivation to "backtrack" to an assay

using a combined antigen. The examiner is not persuaded by this argument. The development of new inventions to perform the same or similar function does not make older technology any less obvious to those of ordinary skill in the art, and does not teach away from the prior invention in the sense of rebutting the motivational element of establishing obviousness. See e.g. In re Gurley, 31 U.S.P.Q. 2d 1130, 1131-1132 (Fed. Cir. 1994). The Federal Circuit stated in Gurley that a "known or obvious composition does not become patentable simply because it has been described as somewhat inferior to some other product for the same use." Id., at 1132. In short, the court held that teaching a better solution to problem is not a teaching away from a previously known, and operable, solution. In this case, that means that even if Zhang was teaching a better method of solving a problem than Zhudyakov, that fact does not destroy the motivation one of ordinary skill in the art would have had to use the older solution taught by Zhudyakov.

d) One of ordinary skill in the art would have had a reasonable expectation of success even in view of the difficulties described by Khudyakov and Kumar.

Here, applicant argues that Khudyakov and Kumar each discuss difficulties that one of ordinary skill in the art would face when trying to create an HCV mosaic protein. Amend. C, pages 20-22. This particular topic has already been dealt with to some extent in the discussion of "prong" five of argument **a)** above. There, it was pointed out that the problems identified in these references were not insurmountable, were known in the art, and that the references themselves pointed out to methods of avoiding the them. In short, while one of ordinary skill in the art would have known that they would face challenges in making any mosaic protein, such a person would nonetheless have had a reasonable expectation of success in the attempt. To have a reasonable expectation of success does not exclude either failure or the need to perform experiments and

make observations common to the art. In this case, the combined teachings of the references of record indicate that one of ordinary skill in the art could have made the claimed invention. They provided no reason to doubt that such a person would eventually be successful although they did, helpfully, identify some of the problems such a person would have to look out for.

However, for the sake of argument, if the examiner were to accept the applicant's rationale, the examiner would also be forced to reject the same claims for lack of enablement. The applicant is arguing that, absent the information taught in the application, one of ordinary skill in the art would not have had adequate teachings to expect success in the making of an HCV mosaic protein. Amend. C, page 22. The specification teaches a technique of making mosaic proteins, a number of homologous NS4 peptides that may be used in the method, and a complete mosaic protein. The specification nowhere asserts that such mosaic proteins could not be made absent the teachings within it, although it does suggest a more convenient method of doing so. See, page 4, lines 14-23 (the specification states that the preferred method of making the protein is the method designated as REAL, however, it does not state that this is the only method or that prior methods will not work). Further, the real method is method of combining peptides, not of identifying them. Thus, the applicant has not solved the challenges to any greater degree than any one else skilled in the art.

If the examiner were to accept the applicant's arguments, then the only embodiments for which the applicant would be enabled are those described in claims 17 and 19. Those claims identify the one constructed mosaic protein, and the only peptides identified by the applicant that could be combined to form other such proteins. If the challenges identified by the applicant were so great as to prevent one of ordinary skill in the art from making other mosaic proteins based on

the teachings of the identified references, then it would equally apply to mosaic proteins comprising peptides other than those disclosed by applicant. This is particularly true as the applicant does not even hint (any more than the art does) as to what other potential sequences may be used, or from which other proteins they may be derived.

For the reasons above, and for the reasons of record, the examiner maintains the obviousness rejection of claims 13, 16, and 18 in view of Khudyakov, in view of Zhang, Bukh, and Chien.

14. **(New Rejection)** Claims 13, 16, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Valenzuela et al., U.S. Patent Number 6,428,792. Claim 13 is described above. Claims 16 and 18 limit the clamed invention, respectively, to proteins wherein the antigenic peptides are from NS4 proteins, and wherein the antigenic proteins are from nonstructural proteins. Valenzuela describes a multiple copy fusion antigen and expression vectors encoding the protein. Abstract, col. 2, lines 23-56. The protein taught by Valenzuela is taught to comprise at least two copies of a given epitope, wherein a copy is defined to include "equivalent antigenic determinant from different strains of the same virus." Col. 7, lines 35-64. Among the proteins identified from which the antigens may be derived are both the nonstructural and structural proteins (col. 8, lines 21-25), including NS3 (a nonstructural protein) and NS4 col. 9, lines 35-37. Although the protein taught by the reference is required to contain at least two non-homologous/non-adjacent epitopes (col. 7, lines 50-55), the current claims still read on the disclosed protein because of the use of the open language "comprising." Claim 13 requires that the antigenic peptide comprise more than two antigenic peptides from the same domain from

different genotypes of HCV. The Valenzuela reference teaches such proteins and expression vectors encoding them. Claim 13 does not exclude the presence of other antigens not of the same domain or of the same HCV. Therefore, even thought the Valenzuela reference protein includes such other peptides, claim 13 still reads on the proteins Valenzuela teaches.

One in that art would both be motivated and have a reasonable expectation of success in the making of the proteins and nucleic acids encoding them from the teachings of the patent.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zachariah Lucas whose telephone number is 703-308-4240. The examiner can normally be reached on Monday-Friday, 8 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Housel can be reached on 703-308-4027. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-4242 for regular communications and 703-872-9307 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.

Z. Lucas
Patent Examiner
November 25, 2002

MARY E. MOSHER
PRIMARY EXAMINER
GROUP ~~1800~~ 1600